# NBN-498 Dinion2X Day/Night IP Cameras

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BOSCH
Invented for life

- 1/3-inch Day/Night CCD with progressive scan
- 20-bit image processing technology
- Wide Dynamic Range, 2X-dynamic engine and SmartBLC
- Quad streaming
- Flexible recording options

Dinion2X Day/Night IP cameras are progressive scan CCD cameras. They can quad-stream video simultaneously – on two H.264 streams, an I-frame recording stream, and an M-JPEG stream. Equipped with 20-bit DSP with 2X-dynamic, they have a wide dynamic range for a sharper, more detailed image with outstanding color reproduction.
Features such as multicasting, internet streaming and iSCSI recording are fully supported. Dinion2X Day/Night IP cameras have built-in video motion detection and additional processing power for video content analysis systems.
Supporting the award-winning Dinion2X digital imaging technology, they provide proven, dependable service for the most demanding security and surveillance requirements, day or night.

## Functions

**Progressive scan**
To capture sharp images, even in busy scenes with high motion content, the Dinion camera uses progressive scan technology.

**Superior image quality**
With a 1/3-inch CCD and Bosch's advanced digital signal processing, the Dinion2X Day/Night IP camera provides outstanding image quality in virtually all situations. The highly accurate 20-bit digital signal is automatically processed to reveal every detail of the image in both the high and low-light areas of the scene simultaneously.

**20-bit Image Processing**
The highly accurate digital signal processing optimally captures the detail in both bright highlights and deep shadows simultaneously. By combining 20-bit image processing and wide dynamic range, the Dinion2X maximizes the information visible in the picture even with strong backlight.

**Wide Dynamic Range**
The superior wide dynamic range performance for all lighting conditions reveals details previously unseen.

**2X-Dynamic and SmartBLC**
Using 2X-Dynamic technology, pixel-by-pixel analysis provides the user with the most detailed information. Turn on SmartBLC to automatically compensate the image without the need for complicated set-up or without compromising dynamic range. Features such as Autoblack and Sharpness further improve the details in a scene, pixel by pixel.

**Programmable Modes**
Six independent, pre-programmed operating modes support typical applications, but are fully programmable for individual situations.

**Day/Night switching**
In night mode, the camera enhances low light viewing by switching the IR (infrared) filter out of the optical path and providing a monochrome image. The camera can switch from color to monochrome mode automatically by sensing the illumination level, manually via the alarm input, or remotely via a web browser. An internal, through-the-lens IR detector enhances monochrome mode stability by preventing the camera from returning to color mode when IR-illumination is dominant.

**Privacy masking**
Four different privacy zones allow specific parts of a scene to be blocked. A mask for any part of the scene can be pre-programmed.

**Default Shutter**
The default shutter speed captures fast moving objects when sufficient light is available. When light levels fall and other adjustments have been exhausted, the shutter speed reverts to a standard setting to maintain sensitivity.

**SensUp Dynamic**
By increasing the integration time up to 10 times on the CCD, the effective sensitivity is dramatically enhanced. This is especially useful when relying only on moonlight for illumination.

**Efficient bandwidth and storage management**
The cameras use H.264 (Main Profile) compression, bandwidth throttling, and multicasting capabilities to manage bandwidth and storage requirements efficiently, while delivering high image quality and resolution.
Bosch's innovative Quad-streaming feature enables the Dinion2X IP to deliver three H.264 streams (two 4CIF streams and an I-frame only stream) together with an M-JPEG stream. These four streams facilitate bandwidth-efficient viewing and recording options as well as integration with third-party video management systems.
Dinion2X IP cameras offer unparalleled recording options. Attached to the network, they can use iSCSI targets directly without any additional recording software. The recording capabilities of the system can be further enhanced by using the Bosch Video Recording Manager.
The camera also supports local recording on a microSD card. This can be used for local alarm recording or for Automatic Network Replenishment (ANR) to improve the overall reliability of video recording.

**Standard intelligence**
With built-in video content analysis, the camera reinforces the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent. The MOTION+ video motion analysis system, which is built into all camera versions, is the perfect solution for applications where basic video content analysis features are required. This motion analysis algorithm is based on pixel change and includes object size filtering capabilities and sophisticated tamper-detection capabilities.

**Hardware enhanced**
The advanced Intelligent Video Analysis (IVA) option bases the IVA algorithm on digital imaging technology that uses multi-level image analysis of pixels, texture, and object direction.

**ONVIF conformance**
The camera conforms to the ONVIF (Open Network Video Interface Forum) specification which guarantees interoperability between network video products regardless of manufacturer. ONVIF conformant devices are able to exchange live video, audio, metadata and control information. They are automatically discovered and connected to network applications such as video management systems.

**Unsurpassed flexibility**
There are many ways to access the camera’s video: on a PC using a web browser, with the Bosch Video Management System, or with the Bosch Video Client. The camera is also ideal for use with a
Divar 700 Series digital video recorder. By routing a video stream to a Bosch video decoder, you can also present the video with ultimate clarity on an analog monitor.

**Cost effective, simple installation**
Three power options, PoE (Power-over-Ethernet), 24 VAC and 12 VDC are available. Using PoE makes installation easier and more cost-effective, as cameras do not require a local power source. To increase system reliability, the camera can be simultaneously connected to both PoE and 12 VDC/24 VAC supplies. Additionally, uninterruptible power supplies (UPS) can be used, which will allow continuous operation, even during a power failure.
For trouble free network cabling, the cameras support Auto-MDIX.
Dinion IP cameras have a service mode for easy installation using the control buttons and an analog video output on the camera as an alternative to configuration over IP. The service mode is simply activated by pressing a button on the camera. This routes the video to the analog output, bypassing the IP video output. The On-Screen Display (OSD) simplifies back focus adjustment and network configuration, minimizing installation and support costs. The Lens Wizard automatically detects the lens type and helps focus the lens at the maximum opening to maintain proper focus.

**Easy Upgrade**
Remotely upgrade the camera whenever new firmware becomes available. This ensures up-to-date products, thus protecting investment with little effort.

### Access Security

Various security levels are available for accessing the network, the camera, and the data channels. As well as password protection with three levels, 802.1x authentication using a RADIUS is supported. To secure Web browser access use HTTPS with a SSL certificate stored in the camera. For total data protection, the video and audio communication channels can be independently AES encrypted with 128-bit keys by installing the optional Encryption Site License.

### Typical applications

- Prisons and correctional facilities
- Traffic monitoring (air, land and sea)
- Hotels, bars and nightclubs
- Commercial and government buildings
- City surveillance and safety
- Border control

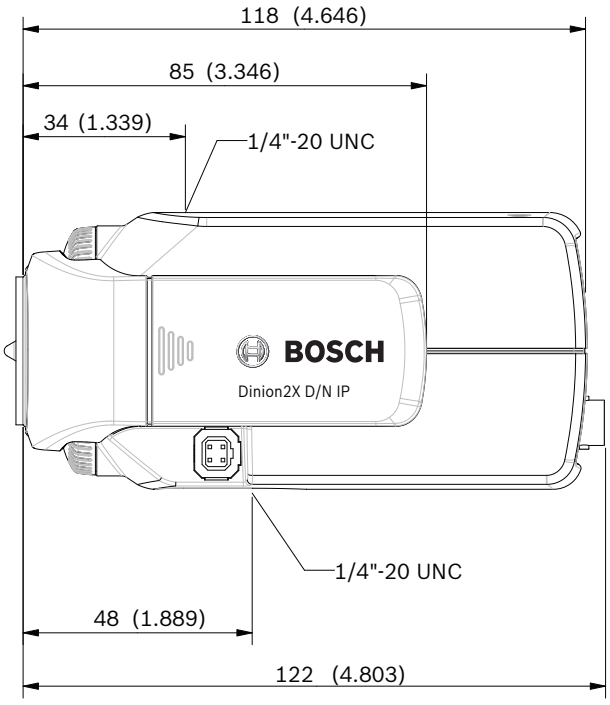
## Certifications and approvals

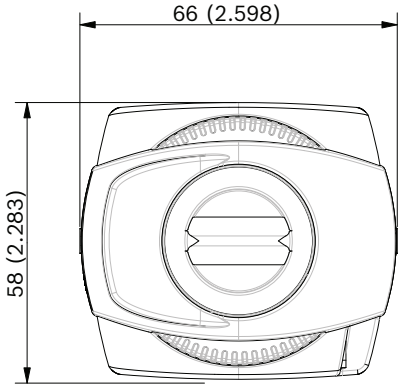
| Electro Magnetic Compatibility | |
|---|---|
| Emission | EN55022 Class B<br>EN61000-3-2<br>EN61000-3-3<br>FCC Part 15 |
| Immunity | EN50130-4 (PoE, +12 VDC)<br>EN55024 (24 VAC)<br>EN50121-4 |
| Safety | EN60950-1<br>UL60950-1 (2nd edition)<br>CAN/CSA-C 22.2 No. 60950-1 |
| Vibration | Camera with 500 g (1.1 lb) lens as per IEC60068-2-6 (5 m/s², operational) |

| Region | Certification |
|---|---|
| Europe | CE |
| USA | FCC + UL |

## Installation/configuration notes

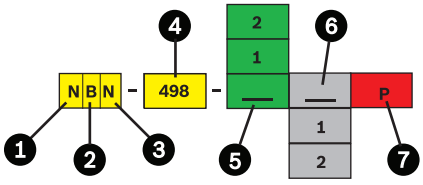
### Dimensions



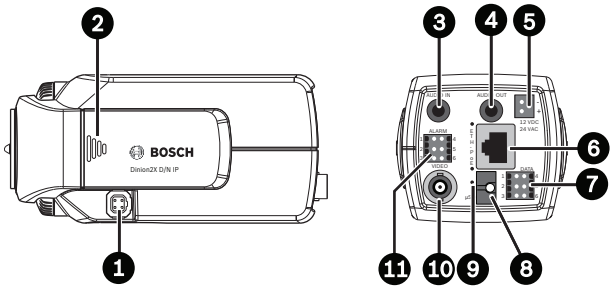

mm (in)

### Ordering chart




| | | | |
|---|---|---|---|
| 1 | N: Network camera | 5 | 1: PAL, 50 Hz<br>2: NTSC, 60Hz |
| 2 | B: Fixed body | 6 | 1: Motion+<br>2I: IVA enabled |
| 3 | N: Day/Night | 7 | P: PoE |
| 4 | 498:Dinion2X performance | | |

## Controls




| | | | |
|---|---|---|---|
| 1 | Lens connector | 7 | Data (RS485/422/232) |
| 2 | Control buttons | 8 | MicroSD card slot |
| 3 | Audio in | 9 | Reset button |
| 4 | Audio out | 10 | BNC video output (service mode) |
| 5 | Power supply input | 11 | Alarm in, relay out |
| 6 | 10/100 Base-T Fast Ethernet | | |

## Parts included

| Quantity | Components |
|---|---|
| 1 | NBN-498 Series Dinion2x Day/Night IP Camera |
| 1 | Spare lens connector |
| 1 | Safety Instructions |
| 1 | Quick Install Guide |
| 1 | Mini DVD-ROM with manuals, software and tools |
| 1 | Power connector |
| 1 | Alarm I/O connector |
| 1 | Data connector |

Lens and microSD card are not included in a standard delivery.

## Technical specifications

### Electrical

| Model No. | Rated Voltage | Rated Frequency |
|---|---|---|
| NBN-498-1xP | 24 VAC ±10% | 50 Hz |
| | 12 VDC ±10% | |
| | Power-over-Ethernet | |
| NBN-498-2xP | 24 VAC ±10% | 60 Hz |
| | 12 VDC ±10% | |
| | Power-over-Ethernet | |
| Current Consumption | 550 mA \| 650 mA IVA (12 VDC)<br>550 mA \| 650 mA IVA (24 VAC)<br>200 mA \| 250 mA IVA (PoE 48 VDC) | |
| Power Consumption | 6.6 W \| 7.8 W IVA (12 VDC)<br>8.2 W \| 9.7 W IVA (24 VAC)<br>9.6 W (PoE 48 VDC) | |

| **Sensor** | |
|---|---|
| Type | 1/3-inch CCD, WDR, dual shutter |
| Active Pixels (PAL) | 752 x 582 |
| Active Pixels (NTSC) | 768 x 494 |

| **Video** | |
|---|---|
| Video compression | H.264 (ISO/IEC 14496-10); M-JPEG, JPEG |
| Data rate | 9.6 Kbps to 6 Mbps |
| Resolution | Horizontal x vertical (PAL/NTSC ips) |
| 4CIF | 704 x 576/480 (25/30 ips) |
| CIF | 352 x 288/240 (25/30 ips) |

| | |
|---|---|
| Overall IP Delay | Min. 120 ms, Max. 240 ms |

| | |
|---|---|
| GOP structure | I, IP, IBBP |
| Frame rate (per stream) | 1 to 25/30 (PAL/NTSC) H.264<br>1 to 25/30 (PAL/NTSC) M-JPEG |

| **Video Out (service mode only)** | |
|---|---|
| Signal | Analog composite (NTSC or PAL), service only |
| Connector | BNC, 75 Ohm |
| Horizontal resolution | 540 TVL |
| Video S/N | 50 dB |

**Sensitivity** (3200 K, scene reflectivity 89%, F1.2)

| | Full video (100 IRE) | Usable picture (50 IRE) | Minimum Illumination (30 IRE) |
|---|---|---|---|
| Color | 2.4 lx (0.223 fc) | 0.47 lx (0.044 fc) | 0.15 lx (0.0139 fc) |
| Color + SensUp 10x | 0.24 lx (0.0223 fc) | 0.047 lx (0.00437 fc) | 0.015 lx (0.00139 fc) |
| Monochrome | 0.98 lx (0.091 fc) | 0.188 lx (0.0174 fc) | 0.060 lx (0.0056 fc) |
| Monochrome + SensUp 10x | 0.098 lx (0.0091 fc) | 0.019 lx (0.00176 fc) | 0.0060 lx (0.000557 fc) |

| | |
|---|---|
| Day/Night | Color, Mono, Auto |
| Modes | 6 preset programmable modes |
| Dynamic range | 120 dB (20-bit image processing) |

| | |
|---|---|
| Signal-to-Noise Ratio | > 50 dB |
| Dynamic engine | 2X-Dynamic, XF-Dynamic, SmartBLC+2X-Dynamic |
| SmartBLC | On (includes 2X-Dynamic ) / Off |
| AGC | AGC On or Off (0 - 30 dB) selectable |
| White Balance | ATW (2500 to 10000K), ATWhold and manual |
| Shutter | Auto (1/50 [1/60] to 1/10000) selectable<br>Auto (1/50 [1/60] to 1/50000) automatic flickerless, fixed selectable |
| Sensitivity up | Adjustable from Off up to 10x |
| Auto Black | Automatic continuous, Off |
| Dynamic Noise Reduction | Auto, On/off selectable |
| Sharpness | Sharpness enhancement level selectable |
| Peak White Invert | On/Off |
| Privacy Masking | Four independent areas, fully programmable |
| Video Motion Analysis | Motion+ or IVA |
| Test Pattern Generator | Color bars 100%, Grayscale 11-step, Sawtooth 2H, Checker board, Cross hatch, UV plane |
| Synchronization | Internal, Line Lock selectable |
| Lens Mount | CS (max lens protrusion 5 mm, 0.2 inch), C-mount compatible (with optional adapter ring) |
| Lens Types | Manual, DC- and Video-Iris auto-detect with override<br>DC-iris drive: max. 50 mA continuous<br>Video-iris: 11.5 VDC ±0.5, max. 50 mA continuous |
| Controls | OSD with soft-key operation (multi-lingual) |

### Audio

| | |
|---|---|
| Standard G.711 | 300 Hz to 3.4 kHz at 8 kHz sampling rate |
| Signal-to-noise ratio | > 50 dB |

### Input/output

| | |
|---|---|
| Audio | 1 x mono line in, 1 x mono line out |
| • connector | 3.5 mm stereo jack |
| • signal line in | 9 kohm typical, 5.5 Vpp max |
| • signal line out | 3.0 Vpp at 10 kOhm typical,<br>2.3 Vpp at 32 Ohm typical,<br>1.7 Vpp at 16 Ohm typical |
| Alarm | 2 inputs |
| • connector | Clamp (non-isolated closing contact) |
| • activation voltage | +5 VDC to +40 VDC<br>(+3.3 VDC with DC-coupled 22 kOhm pull-up resistor) |
| Relay | 1 output |
| • connector | Clamp |
| • voltage | 30 VAC or +40 VDC<br>Maximum 0.5 A continuous, 10VA |
| Data port | RS-232/422/485 |

### Software Control

| | |
|---|---|
| Unit Configuration | Via web browser or Configuration Manager |
| Flicker Control | 50/60 Hz, selectable |
| Software update | Flash ROM, remote programmable |

### Network and Storage

| | |
|---|---|
| Protocols | RTP, Telnet, UDP, TCP, IP, HTTP, HTTPS, FTP, DHCP, IGMP V2/V3, ICMP, ARP, SMTP, SNTP, SNMP, 802.1x, UPnP |
| Encryption | TLS 1.0, SSL, AES (optional) |
| Ethernet | STP, 10/100 Base-T, auto-sensing, half/full duplex, RJ45 |
| PoE supply | IEEE 802.3af compliant |
| Local Storage | Supports microSD cards (SDHC) |

### Mechanical

| | |
|---|---|
| Dimensions (H x W x L) | 58 x 66 x122 mm (2.28 x 2.6 x 4.8 inch) without lens |
| Weight | 542 g (1.195 lb) without lens |
| Color | RAL 9007 Metallic Titanium |
| Tripod Mount | Bottom (isolated) and top 1/4-inch 20 UNC |

### Environmental

| | |
|---|---|
| Operating Temperature | -20°C to +50°C (-4°F to 122°F) |
| Extended Operating Temperature* | -20°C to +55°C (-4°F to 131°F) |
| Operating Temperature (IVA) | -20°C to +45°C (-4°F to 113°F) |
| Storage Temperature | -40°C to +70°C (-40°F to +158°F) |
| Operating Humidity | 20% to 93% RH |
| Storage Humidity | up to 98% RH |

* with HAC-IPCCC and UHO outdoor housing with active cooling

## Ordering information

**NBN-498-11P Dinion2X D/N IP Camera**
1/3-inch Progressive scan, H.264, 2X DSP, WDR, PAL, 50 Hz, PoE, microSD slot
Order number **NBN-498-11P**

**NBN-498-12IP Dinion2X D/N IP Camera**
1/3-inch Progressive scan, H.264, 2X DSP, WDR, PAL, 50 Hz, PoE, microSD slot, IVA enabled
Order number **NBN-498-12IP**

**NBN-498-21P Dinion2X D/N IP Camera**
1/3-inch Progressive scan, H.264, 2X DSP, WDR, NTSC, 60 Hz, PoE, microSD slot
Order number **NBN-498-21P**

**NBN-498-22IP Dinion2X D/N IP Camera**
1/3-inch Progressive scan, H.264, 2X DSP, WDR, NTSC, 60 Hz, PoE, microSD slot, IVA enabled
Order number **NBN-498-22IP**

**Accessories**

**EX12LED-3BD-8M Infrared Illuminator**
EX12LED IR Illuminator, 850 nm, 30 deg beam
Order number **EX12LED-3BD-8M**

**EX12LED-3BD-8W Infrared Illuminator**
EX12LED, IR Illuminator, 850 nm, 60 deg beam
Order number **EX12LED-3BD-8W**

**EX12LED-3BD-9M Infrared Illuminator**
EX12LED IR Illuminator, 940 nm, 30 deg beam
Order number **EX12LED-3BD-9M**

**EX12LED-3BD-9W Infrared Illuminator**
EX12LED, IR Illuminator, 940 nm, 60 deg beam
Order number **EX12LED-3BD-9W**

**LTC 3364/21 Varifocal Lens IR corrected**
1/3-inch, 2.8 – 6 mm, DC-iris, CS-mount F1.4-200, 4-pin
Order number **LTC3364/21**

**LTC 3664/40 Varifocal Lens IR corrected**
1/3-inch, 2.8 – 11 mm, DC-iris, CS-mount F1.4-360, 4-pin
Order number **LTC3664/40**

**LTC 3674/20 Varifocal Lens IR corrected**
1/3-inch, 7.5 – 50 mm, DC-iris, CS-mount F1.3-360, 4-pin
Order number **LTC 3674/20**

**LTC 3764/20 Varifocal Lens IR corrected**
1/2-inch, 4 – 12 mm, DC-iris, C-mount F1.2-360, 4-pin
Order number **LTC 3764/20**

**LTC 3774/30 Varifocal Lens IR corrected**
1/2-inch, 10 – 40 mm, DC-iris, C-mount F1.4-360, 4-pin
Order number **LTC 3774/30**

**UPA-2410-60 Power Supply**
120 VAC, 60 Hz, 24 VAC, 10 VA Out
Order number **UPA-2410-60**

**UPA-2430-60 Power Supply**
120 VAC, 60 Hz, 24 VAC, 30 VA Out
Order number **UPA-2430-60**

**UPA-2450-60 Power Supply, 120 V, 60 Hz**
Indoor, 120 VAC, 60 Hz In; 24 VAC, 50 VA Out
Order number **UPA-2450-60**

**UPA-2420-50 Power Supply**
220 VAC, 50 Hz, 24 VAC, 20 VA Out
Order number **UPA-2420-50**

**UPA-2450-50 Power Supply, 220 V, 50 Hz**
Indoor, 220 VAC, 50 Hz In; 24 VAC, 50 VA Out
Order number **UPA-2450-50**

**S1374 Adapter**
converts C mount lens to CS mount camera
Order number **S1374**

**HAC-IPCCC Camera Cooling Case**
For use with Dinion IP cameras in combination with HSG and UHO Series housings equipped with an optional blower
Order number **HAC-IPCCC**

**Software Options**

**MVC-FIVA4-CAM**
IVA 4.xx/5.xx VCA software license for IP camera/dome (e-license)
Order number **MVC-FIVA4-CAM**

**BVIP AES 128 Bit Encryption**
BVIP AES 128-bit encryption site license. This license is required only once per installation. It enables encrypted communication between BVIP devices and management stations.
Order number **MVS-FENC-AES**

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